

## THE FOOD PLANT OF ENARMONIA TRISTRIGANA, CLEMENS.

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WITH DESCRIPTION OF MATURE LARVA BY JOHN N. SUMMERS, MASS. AGRICULTURAL  
EXPERIMENT STATION, AMHERST, MASS.

THIS beautiful species of Micro Lepidoptera was first described by Clemens in the Proceedings of the Entomological Society of Philadelphia, vol. v, 1865, and the original description is as follows:

"Fore wings blackish-brown, costa pale-yellow from near the base of the wing to the tip, with eight blackish, oblique streaks and four bluish metallic spots adjoining the yellowish costal stripe. On the middle of the dorsal margin is a large pale-yellow blotch containing three blackish lines, with a bluish metallic spot above it in the middle of the wing, and a semi-band between it and the hinder margin. Hind wings dark brown. Coll. Ent. Soc. Phil.—Va."

Dyar's Catalogue gives the localities of this species as Mass. and Va. Mr. W. D. Kearfott writes me that he has specimens from Anglesea, N. J., May 20th; Essex Co., N. J., May 11th, and July 4th, 7th, and 25th; Newark, N. J., June 1st; and Ashley, Pa., June 24th. He also adds that he has identified specimens from all the New England States and Eastern Canada.

Although the place where this species breeds is one of my favorite collecting grounds, I have never taken a flown specimen of it there and only one elsewhere.

My attention was first called to the work of this species by the dying bunches of *Baptisia tinctoria* which is very common in some localities near here. There seemed to be no healthy plants and an examination showed that nearly every stalk, except some of the smaller ones, was occupied by one or more whitish larvae which had eaten out the inside and left the space filled with a fine debris that resembled sawdust very closely.

The beginning of the burrow seemed to be either on the branches at some distance from the main stem, or, more often, at the point where it joins the stem, and always on the under side. The entrance is marked by a tiny black scar which is sometimes hidden by the leaf, or stipule scar, at the base of the branch. Further investigations show that there are other apparent entrances or exits on the larger stalks sometimes covered by a dead leaf held by silk. These are quite large and I am unable to account for them, assuming that they are made by the larva of the moth, unless they are used for the ejection of debris or as an exit for the imago.

The stem is also eaten out above the highest visible indications of an entrance and in many cases the branches are also mined for some distance. Examinations made August 26th and September 8th showed that the stems are hollow and that the larvae feed on the whitish inner layer which resembles pith; at intervals pits, or enlargements of the gallery, are excavated to the tough outer fibres, while in many instances the inside is eaten entirely away. There are holes eaten through to the outside at some of these places. In some of the larger stems there will be scarcely a trace of a larva for several inches, and then for some distance it will be tightly packed with sawdust. Many times a larva will be found in this sawdust and another larger larva at the base of the stalk below another plug of debris. In one of the large stems five larvae were found and in most cases there were at least two larvae. Many of the larger larvae have the abdominal segments stained a delicate orange-pink on the dorsum. The larvae at this time were about 9 mm. long and spun a thread when crawling.

On November 5th the larvae were found, sometimes one, again two, at the base of the stalk just above where the new buds have already started. They were enveloped in a flimsy cocoon of silk and sawdust with the larva head up. The stalks were dug up, cutting of the stem just below the buds under the ground, and kept in tin cans all winter. Some of the cans were closed and some left open and, although they moulded very badly, quite a number of imagoes emerged between May 17th and some time during the first week of June. In most of these cases the imagoes emerged from the stem where cut off at the top; but in nature they emerge at the side of the stalk a few inches above the ground and the exuviae is left sticking out of the hole about two thirds of its length.

A search for material on June 1, 1907, resulted in finding a few pupae and larvae in shaded places while the majority of the stems showed that the imagoes had emerged some time previous. Several of the infested stalks were sent to Prof. C. H. Fernald at Amherst, Mass., at his request, and the moths that appeared from them were pronounced to be the species, under discussion. Bred specimens of this moth were first identified for me by Mr. W. D. Kearfott of Montclair, N. J., to whom I am indebted for the determination of nearly all of my Micro Lepidoptera.

#### FULL GROWN LARVA.

Length at rest 8 mm., in motion  $9\frac{1}{2}$  mm. These measurements were taken from larva described, but others were found measuring one or two millimeters more than this.

General color creamy white, tinged to varying degree with red, especially on

last few segments, so that some larvae have no trace of this color, and others are decidedly red. From specimens examined it appears that young larvae have this color more marked than even the reddest full grown ones. Entire body, with exception of head, second segment on dorsum, anal shield and numerous prominences scattered over the body, has a peculiar rough appearance due to minute spine-bearing elevations distinguishable only under the microscope, and it is also faintly shining. These elevations, minus the spines and less prominent, may be found on all the smooth portions by careful microscopic examination.

Head strongly bilobed, light castaneous, smooth, shining, with a few scattered light brown hairs; bordered posteriorly by narrow dark brown band, which ends just back of ocelli in an irregular brown spot. Lateral edges of clypeus and two longitudinal sutures on under side of head very dark brown. Vase shaped light central area on ventral side of head, with the base posterior, space between this and the two above mentioned sutures dark brown. First segment of antennae pale, rest same color as head with segments beyond second bearing several light brown hairs. Ocelli six in number, pale, placed on a dark brown spot. Labrum with central lighter band which varies from pale at upper end to light brown at lower, and with all outside this band dark brown. Mandibles dark brown, with almost black tips. Other mouth parts pale with their tips and lateral edges of labium darker.

Body strongly segmented, second segment anterior three-fourths light brown with numerous small darker areas, wrinkled, shiny; third wider, fourth and fifth narrower than third, sixth wider again and remainder slightly decreasing in diameter to posterior end of body. Third and fourth segments each with two transverse sinuate wrinkles over whole of dorsum, and one small one each side of median line in front. Fifth to twelfth segments with one wrinkle like large ones in other segments. Anal shield smooth, shining, tinged with yellowish brown and possessing a slight central depression. Numerous small, smooth, shining prominences are present on body located as follows: on dorsum there are two parallel rows each side of median line on fifth to twelfth segments inclusive, the four on each segment being placed so as to form a trapezoid on segments five to eight, and a square on nine to twelve. These two rows are replaced by double prominences on segments three, four and thirteen. Just below these rows there is a partial row with prominences placed on segments two, three, four and thirteen.

Below this and close to stigmata there is another row on segments three to eleven inclusive and two more, evidently belonging to this row, on twelfth and thirteenth segments on a level with stigmata, that on the twelfth being placed just in front of the stigma. Another row set close to the stigmata below on segments two to thirteen

inclusive, those on segments three and four being out of line and on a level with the stigmata. Just above line of legs there is another row on segments two to thirteen inclusive and on ventral side, segments five, six, eleven, twelve and thirteen have each four prominences placed in a transverse line.

First prominence of the partial row on the side bears three hairs, each of the others of this row and all the double prominences mentioned bear two hairs and a single hair is borne by every other prominence. All hairs are light brown in color.

In addition to above mentioned hairs, there are three each side of median line on line with dorsal prominences, a circle broken in front around depression on anal shield and several on each leg, all of about the same color, but all those on under side of body are much shorter and somewhat lighter.

Under side of body uniform creamy white, true legs same color, with tips darker. Claws and vertical line on inside of first segment of each leg dark brown. Prolegs on segments seven to ten inclusive and thirteen same color as body with terminal ring of light brown hooks on first four pairs and half ring of same hooks on last pair.

CANKER WORM MOTHS WITH CRIPPLED WINGS.—In the last warm days of November (20–23 Nov. 1908) the adults of the fall canker worm (*Alsophila pometaria* Harris) are emerging. Of these the ♂ ♂ are about one half as numerous as the ♀ ♀, this proportion of ♂ ♂ being considerably less than usual in this species. It was very noticeable that many ♂ ♂ were clinging to the trunks with crippled wings. On examining many specimens it was found that one out of 5 was crippled. We can not be in error in attributing this condition to the unusually dry summer and fall, for during this time the insects were in the pupa stage. It is well known that pupae kept dry either die or yield only dwarfed or crippled adults, if they are accustomed to other conditions in nature.

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